



Human Systems

integration division



Human Fatigue Countermeasures: Space

Objective

To minimize the adverse effects of fatigue and maximize performance and alertness during flight operations, thereby maintaining and improving the safety margin.

Approach

Develop fatigue countermeasures, educational tools, incident/accident investigation methods, and provide technical input to national policy considerations. Conduct research that capitalizes on laboratory-based experimental research, flight simulations, and field research during regular operations. process involved over 300 transport pilots participating in observational studies, interview studies, part-task simulations, high-fidelity simulations, and a flight test.



Impact

Reduction of fatigue and related performance problems through research on cockpit rest and activity periods, duty/rest cycles in commercial aviation, and alertness management technologies. Research includes:

- The Ames Fatigue Countermeasures Group participated in two Neurolab Space Shuttle mission projects, STS-90 flown in April 1998 and STS-95 in October 1998. The project, "Clinical Trial of Melatonin as a Hypnotic for Neurolab Crew," studied the effects of spaceflight on sleep and its regulation by the body's internal clock, melatonin as a sleep aid, and to determine the correlation between respiratory changes and in-flight sleep
- Alertness management will be applied to Mars Exploration Rover schedules and project staff and scientists will be briefed on methods to mitigate fatigue and increase probability of mission success.
- A biomathematical model to predict human performance during long duration space flight is being developed as an aid in planning astronaut work and rest schedules.

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